



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/716,708	11/20/2000	Wolfgang Siebert	SIEBERT ET AL 2	6782

7590 11/06/2002
COLLARD & ROE, P.C.
1077 Northern Boulevard
Roslyn, NY 11576

EXAMINER

RAO, SHRINIVAS H

ART UNIT	PAPER NUMBER
----------	--------------

2814

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/716,708

Applicant(s)

SIEBERT ET AL.

Examiner

Steven H. Rao

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Response to Amendment

Applicants' amendment filed on August 15, 2002 has been entered on August 28, 2002.

Therefore claim 1 as originally filed is currently pending in the application. Claims 2-11 were previously withdrawn from the application.

Election/Restrictions

This application contains claim s 2-11 that are drawn to an invention nonelected with traverse in Paper No. 8. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Drawings

The drawings filed on 8/15/02 has been objected to by the draftsman for the reasons listed in the enclosed PTO-948.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson et al. (U.S. Patent No. 6,284,384 herein after Wilson) and Krishna Vepa et al. (EPA Patent

Art Unit: 2814

No. 684634 herein after Vepa, cited by the applicants' in their IDs) for reasons previously stated (and reproduced below for ready reference) and the reasons stated herein.

With respect to claim 1, Wilson describes a semiconductor wafer (Wilson fig. 1 #1, col.8 line31) with a front surface (fig.1 # 3, col.8 line 32) and a back surface (fig. 1 # 5, col. 8 line 33) and an epitaxial layer of semi conducting material deposited on the front surface (col. 9 lines 49-50), wherein the surface of the epitaxial layer has a maximum density of 0.14 localized light scattering per cm^2 with a cross section of greater than or equal to 0.12Um (Wilson col. 8 lines 4-10).

The front surface of the wafer prior to the deposition of epitaxial layer, has a surface roughness of 0.05 to 0.29 nm RMS, measured by AFM on a 1 Ux1Um reference area.

Wilson does not specifically describe the front surface of the wafer prior to the deposition of epitaxial layer, has a surface roughness of 0.05 to 0.29 nm RMS, measured by AFM on a 1 Ux1Um reference area.

However, Vepa a patent from the same filed of endeavor, describes a polishing method that produces an average surface roughness of not greater than 1.0 nm Ra to produce a wafer with improved surface roughness with reduced haze.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to Vepa's surface roughness parameters in Wilson's polishing and

cleaning technique (Wilson col. 17 lines 1-5) to produce a wafer with improved surface roughness with reduced haze. (Vepa page 3 lines 3-5).

Response to Arguments

Applicant's arguments filed on 8/15/2002 have been fully considered but they are not persuasive for the following reasons :

It is noted that Applicants' in their arguments against Wilson and Vepa individually , in the amendment filed on 8/15/002 are engaging in piecemeal analysis of the references, it has been held that one cannot show non-obviousness by attacking references individually where, as here, the rejections are based on combination of references.

Applicants' first contention that the Wilson reference is distinguishable over the claim because Wilson discloses only that the wafer is subjected to polishing techniques which are well known in the art before the epitaxial layer is deposited are not persuasive because the pending claim 1 is a deice (product) claim that does not recite any methods steps and it is well settled law that limitation from the specification cannot be relied upon to distinguish over prior art and therefore only what is recited in the claims can be given patentable weight. See *In re Lundberg*, 113 USPQ 530 (CCPA 1957).

Applicants' second contention is that Wilson does not teach surface roughness. It is noted that the previous rejection was over the combined teachings of Wilson and

Art Unit: 2814

Vepa and Vepa for e.g. Abstract last two lines teaches the surface roughness (see above).

Applicants' next contention that Vepa teaches its surface roughness by an expensive two step stock removal polishing cannot be given patentable weight because the alleged difference "surface roughness by an expensive two step stock removal polishing " is not presently recited in the claims. Assuming arguendo that it is recited the claims limitation, " surface roughness by an expensive two step stock removal polishing" is taken to be a product-by –process limitation and is nonlimiting. See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974), *In re Marosi et al.* , 218 USPQ 289,292 (Fed. Cir. 1983) etc.

It is also noted that " the performance of two steps simultaneously, which have previously been performed in sequence was held to have been obvious. *In re Tatincloux*, 108 USPQ 125 (CCPA 1955).

Applicants' other contention that Vepa is distinguishable because Vepa measures the roughness value by an optical interferometer whereas the present claims recite atomic force microscope, AFM is also not persuasive because again Applicants' are attempting to distinguish a device by a method step and Vepa on page 6 lines 9-13 describes the use of at least two microscopes namely Nomarski and Wyko-2D microscopes.

Therefore all of the applicants' contentions are found to not persuasive.

It is noted that the same reference as previously applied is also applied here thus providing a separate basis for making this action Final.

Art Unit: 2814

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H. Rao whose telephone number is (703) 3065945. The examiner can normally be reached on 8.00 to 5.00.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 7463926 for regular communications and (703) 872-9319 for After Final communications.


Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 3067722.



Steven H. Rao

Patent Examiner

October 31, 2002



LONG PHAM
PRIMARY EXAMINER